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An,

Inaugural Dissertation.

Passed March 19
1824
W. E. H
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on,

Hydrocephalus Acutus.

By Cuthbert. T. Green. of Maryland
Licentiate in medicine of Md.
and member of the Philad.
Medical Society.

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To,

William D. Brinckle. A.M. M.D.

Sir.

It affords me much pleasure in seizing on the first opportunity, to express my gratitude for your unremitted attention, while prosecuting my studies under your direction. I am likewise much indebted to you for other attentions equally dear: for which I render this tribute to your friendship.

The Author.

Dissertation 9.

From a consideration of the immense fund of talent displayed in the productions of some of the ancient gentlemen of our profession, I am not a little astonished that hydrocephalus, a disease so pervading in its ravages on the young and rising part of the community, was not noticed as a seperate disease until so late as the year 1768. At which time, it was taken minutely into consideration by Doctor Whytt, who has, I conceive, marked out the course which is to direct us to its correct pathology. Since that period however, it seems to have at-

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tracted that attention, which its formidable nature necessarily demands.

Hydrocephalus, like other dangerous affections, is not by any means limited in its sphere of action. It occurs more particularly in warm climates, and in the mildest seasons. Children from the age of one, to nine or ten years, appear to be the most common victims which this malady selects; though we sometimes see the "vis medicatrix naturæ" in the adult, struggling with this almost certain messenger of death. It is the opinion of most physicians who have noticed the disease, and indeed I have observed it myself, that families, or persons of delicate constitutions, scrophulous taint, and more than ordinary brilli-

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Various and contradictory have been the opinions, entertained by respectable practitioners of medicine respecting the nature of this disease. Formerly, physicians as Fothergill, Darwin, Withering, Whytt, Smyth, &c supposed it to be an affection of a dropsical nature, while the physicians of the present day, say it may with more propriety be classed with the inflammatory diseases; and disclaim any thing like an idea of its being a disease similar in any respect to a dropsy. It is to the work of Dr Cheyne, that the new views of the pathology of hydrocephalus may be traced, and it is his ideas that no small share of the medical men of the present day

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have adopted; without, I am persuaded first giving the due degree of reflection. The author, whose name I have just mentioned, in his pathology of hydrocephalus says, "That in this disease there is produced a venous congestion, in addition to and arising from the increased arterial action: that the effusion of serous fluid arises from this venous congestion, and the effusion has a tendency to counteract the baleful effects of the increased action, and retard the fatal termination of the disease, is evident in fact, I think it no hasty opinion, that death would occur earlier in this disease, did not the fluid exude, and thus continue to the brain the necessary degree of support"

Hence it may be seen that this author is possessed of an opinion, that the effusion into the ventricles is nothing more than the effect, and no way calculated, to aggravate, but rather to mitigate the existing morbid action. An opinion of this kind although emanating from a source so respectable I am at one disposed to pronounce as inconceivably absurd. That it is produced by a venous congestion succeeded by an increased inflammatory action, no one, I think will deny. But I am disposed to view the last stages of this disease as of a dropsical nature, and am as well convinced that the uniform fatality of the disease is owing to that action. In this opinion, I am fortified by the high authority of Wright, who

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when speaking of this disease says "the immediate cause of every kind of dropsy is the same; viz such a state of the parts as makes the exhalent arteries throw out a greater quantity of fluid than the absorbents can take up"

as Dr. Cheyne's ideas of the nature of hydrocephalus are not in exactness consonance with the views on the subject entertained by myself, I shall endeavour to point out some of the errors advanced by him, as well as to establish those which I have adopted as most correct.

1st It is an incontrovertable fact, that there is little or no space for containing fluids in the divisions called ventricles, in a healthy state of the brain; consequently, this effusion into

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"the mansion of life and sensation" as extraneous matter, acts as a recexciting cause, and renders the disease still more ungovernable. If this be not the case, how can practitioners decide so accurately when this effusion takes place, or why does Dr Cheyne himself, in another part of his work, pronounce it an incurable disease when it does terminate in this manner. The immediate death of persons who have been labouring under ascites for a considerable length of time, from the sudden evacuation of the water, does not strengthen Dr Cheyne's theory in regard to the stimulus of the water on the adjacent parts;- particularly if we take into consideration the vast difference

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of structure, as well as the functions of the parts implicated in the two diseases. 2nd That it is a dropsy or nearly allied to it, is more than probable from a consideration of the common cause which produces both viz congestion. 3rd That the symptoms are similar to those that occur in dropsy, as a suppression of urine, of perspiration, costive state of the bowels, hot dry skin, much thirst, paralysis of one side of the head, of one arm, difficult respiration &c symptoms taken collectively are certainly an evidence of a dropsical action. As a proof that the effusion does not act as an irritant or hasten on the death of the patient, it has been stated, that death has taken place after a development

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ment of the symptoms peculiar to hydrocephalus, and on dissection, nothing like a collection of serum has been found in the ventricles. In such cases, I think it could not with propriety be termed hydrocephalus; as in all terminations of the kind, we have but one of the three stages which are mentioned as characteristics of the disease, which is the stage of excitement, in which as far as my limited experience goes the symptoms resemble very much those of an ordinary attack of inflammation of the brain.

As to the theory of its being an inflammation peculiar in any respect, I have seen no satisfactory proof. I ask is not an effusion into

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the tentacles of the brain as the effect of a high degree of inflammation, as much a dropsy, as a collection of water in the thorax as the consequence of an inflammatory action in some one of the viscera of that cavity?

Quotidian is rather diversified in its mode of attack. Sometimes it runs its course and terminates in death in a few days and sometimes it is more mild in its assault and assumes a tedious and protracted form, consequently, it calls for some division, and has by some been divided into the Idiopathic and Symptomatic, from the circumstance of its appearing either as an original disease, or as the result of a preceding one, at first quite different. Each of

their forms have again been divided into three stages, which are said to be known by particular attention to the state of the pulse with other symptoms. They are called
1st The stage of increased sensibility.
2nd The stage of torpor, or comatose stage.
3rd The convulsed stage.

But in very many cases these stages are not well defined.

The symptoms which mark the incipient stage of hydrocephalus are numerous. Indeed it is a general remark by practitioners, that in no disease is there a greater difficulty of laying down a general description of symptoms, than in

this; so protiform are the symptoms themselves. I shall content myself with delineating those only that are most prominent and general in their appearance.

It begins with a slight degree of fever, with a pain in the head and abdomen, sick stomach, flushed face, hot dry skin, delirium, and coma, which make their appearance in rapid succession and terminate the existence of the little sufferer in a few days; very often, however, the patient for a considerable length of time previous to the attack becomes languid, peevish and uncomfortable, without any particular complaint. After a while the appetite is impaired, stom

not becomes irritable, with a vomiting of bile, constipated bowels (though sometimes he purges clayey or black fœtid stools) pain in the head with an intolerance of light and sounds, watching and quick pulse constitute the symptoms of the first stage.

In the second, the patient is not easily aroused, has a great inclination to sleep, but is much interrupted with sharp pains shooting through his head; when in bed the child is constantly rolling about or putting his hands up towards his head, his pupil is dilated, pulse slow, suffusion of the adnata, and the eye which was in the first stage morbidly sensible, now loses its lustre and expression

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The third stage is known by the increased arterial action, strabismus, hurried breathing, stupor and convulsions; symptoms which are universally regarded by the discerning practitioner as the harbingers of death.

Nothing however can be more irregular than the progress and development of the foregoing symptoms; the head ache is very often not complained of until effusion has taken place, which is a very striking proof of the existence of the inflammatory action without much pain. At other times, the most alarming symptoms will suddenly remit, and the child at the same time in eminent danger. The eye has heretofore been looked

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upon as one of the most unerring criterions, but like the pulse, in some particular cases, it will be found very fallacious.

I shall now make a few observations on the symptomatic form of hydrocephalus. This is by far the most frequent in its appearance and is likewise the most manageable of the two kinds. It appears that there is in child-hood a greater supply of blood to the digestive organs, and the brain, than to any other parts of the body. These two organs are liable to numerous disarrangements, from the morbid stimulation of food and drink on the one part; and mental irritation on the other. From the direct sympathy existing between the

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two organs, one cannot continue long diseased without drawing the other into a similar state. This disease then, almost always occurs from the brain morbidly sympathizing with a disordered state of the alimentary canal, or from a congestion or an interruption of the functions of some of the abdominal viscera, but more particularly with that of the liver; Currie supposed all cases of hydrocephalus were produced by previous irritation of the liver; such ideas I think rather pass the confines of reason. In what way this morbid sympathetic influence is propagated, is not for me to determine in this place. That irritants in the primæ viæ bring on this

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disease, we need go no further for proof than the fact, of some of the most alarming symptoms being relieved by a recourse to purgative medicines.

Symptomatic hydrocephalus comes on in a slow insidious manner, and to an inattentive observer it would appear that there was little or no derangement taking place:- but in the course of a few days, some abdominal derangement will be evident. The disease at this time may be prevented by a prompt removal of the primary source of irritation.

The symptoms which characterize this form of the disease, are languor, an unhealthy countenance dullness of the eye, skin hot and

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sey, bowels torpid appetite irregular and tongue white. If the bowels be open, the stools here as in the other form, are white clayey or bilious. The abdomen now becomes somewhat swollen and sore: the pulse a little accelerated and the head is likewise drawn into the general disorder. Dr Yeatesays children at this period evince a precision of ideas and quickness of apprehension much beyond their years

The appearances of the brain of children who die of hydrocephalus are an engorged state of the vessels of the membranes spread over, and lining the ventricles, and considerable adhesions as well as thickening of this structure will likewise

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be observed. But the most common of all morbid appearances is the effusion of water either in the ventricles, or between the lobes of the brain, or between the dura and pia mater. This is generally believed to be the effect of the increased inflammatory action of the blood vessels of the part; and appears to be an effort of nature, for the present relief of the overloaded state of the vascular system. This very effusion though ultimately proves fatal in its consequences both by compression and errosion. Nature in this case, as in many others, produces irremediable injury by relieving herself at an improper place.

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of cure, when first called to a patient labouring under hydrocephalus, we should be very particular in our examinations and enquiries, not only in regard to symptoms then existing, but to the previous state of the child, in order that we may if possible designate the kind, an object in some cases very difficult to effect, as the symptoms which I have stated are not always well developed consequently the diagnosis in many cases is difficult.

The treatment to be adopted in the first stage of this disease should vary according to the symptoms which present themselves. If they are such as were mentioned as chara-

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ceiving an incipient attack of the ataxic form: no one conversant with the nature of the disease would hesitate a moment to resort to the use of ol. lar-ch., which should be used freely but with discrimination. After having afforded some relief by this practice, our next resource is from purgatives. of these calomel & jalap claims our first attention. Its efficacy in overcoming constipation, its peculiar power on the liver, its promptness in altering the secretions of the stomach, bowels &c are the properties which particularly recommend its employment in this disease. Too much cannot be said of the propriety of purging here, as it is on the judicious exhibition of them, that much of our success depends. Calomel

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combined with gamboge or jalap, and administered in such doses as to procure copious evacuations, daily repeated, will be found very beneficial.

But if cerebral irritation be urgent, the jugular vein or temporal artery should be opened and blood let to a considerable extent. In conjunction with this mode of treatment, the head should be shaved and cups applied; or perhaps leeches would serve a better purpose, under this circumstances, as they detract blood with more ease and are not attended with the distressing symptoms which the operation of cupping is found to produce. This course when vigorously persisted in will sometimes be productive of very salutary effects, nor should the practitioner let

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the advantage thus gained be neglected as the bowels, as well as the part on which the disease spends its force, require the utmost degree of attention. If however some circumstances continue which would lead to a belief in the continuance of the disturbance of the encephalon, accompanied with a diminution of arterial action, it would be advisable to discontinue the use of the lancet, and resort to cold applications such as powdered ice or cloths wrung out of ether and water or vinegar and water.

As yet I have said nothing of the use of blisters, the well timed application of which constitute very important remedies in the manag

ment of hydrocephalus. They should be applied to the nape of the neck, on the forehead, or all over the head. It is very often necessary to keep up the discharge, to which alone the salutary effect is due. The blister should be dressed with the mercurial ointment or if there appears a disposition in the part to heal the blister might be re applied.

A good deal has been said of the powers of digitalis in this disease But as to its influence in this or any other disease requiring depletion I entertain strong doubts, nor am I disposed to value its remediate powers very highly after effusion has taken place. That it possesses the power of arresting the circulation no one

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will pretend to deny, but I strenuously contend that this property is not sufficiently important as to recommend its application in this disease. I must confess it is not with a little diffidence that I oppose the opinions of men of experience in regard to the operation of this or any other medicine, but being emboldened by the liberal principles set forth by more than one of the gentlemen into whose hands this essay is to fall; I make no hesitation in giving the above as my candid belief, which is drawn from some experience in its use.

When effusion takes place our whole reliance is to be placed on the sudden introduction of mercury into the system. This action should be in-

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exceed by the prompt exhibition of calomel in large doses, together with mercurial frictions, employed to a very considerable extent, the ointment in such circumstances should be strong er than it is ordinarily made.

If it should come on with the train of symptoms mentioned as indicating a sympathetic affection, the course then to be pursued is self evident: which is to clear the whole line of intestines of its offensive contents, with a preparation, of which, calomel is the base. If there be much arterial excitement the latent must be unsheathed, but not carried to such an extent as in the idiopathic. The evacuations themselves are the best criterions to direct us in regard to the continuance of the purgative course;

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After effusion has taken place we are unanimous in pronouncing the case a desperate one, an opinion drawn from a knowledge of the inability of the attendants in the part where the effusion mostly takes place. From the prevalence of the foregoing opinion I am aware that much mischief at times has arisen. In order then to guard against it, it should be borne in mind that the symptoms of actual effusion are very equivocal, and may be closely imitated by a turgescence of the cerebral vessels. From this circumstance then let us learn a practical precept, which is, not to discontinue the remedies proper in effusion until symptoms make their appearance which we know to be the precursors of death.

If however the child does not sink under the violence of the disease, and symptoms manifest themselves which predict a more favourable termination, much care on our part is necessary; as in no disease is there a greater liability to a relapse than in this. The child is mostly left in a very debilitated state on the subsidence of so formidable a disease. Our business then is to use every means of supporting the strength of the child. To effect this we must resort to the use of tonics and a mild and nourishing diet in conjunction with gentle exercise and change of air.

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